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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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BELI., BOYD & LLOYD, LLP				
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EXAMINER				
DONABED, NINOS J				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/550,229

Applicant(s)

SCHOLLMEIER ET AL.

Examiner

NINOS DONABED

Art Unit

4177

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Response to Amendment

1. ***In the Amendment dated 11/28/2007, Claim 28 was added and claims 1-8 had been cancelled; therefore, Claims 9-28 remain pending wherein Claim 9 and 28 are independent.***

Specification

2. The disclosure is objected to because of the following informalities: the 't' in 'the' should be capitalized in paragraph [0004] Line 4. .

Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 9-28 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The mere listing of method steps in **Claim 9** does not produce a useful, concrete **and tangible** result because nothing is done after the link weights are adapted in the communication network. Thus does not meet the statutory requirements for patent eligibility under 35 U.S.C. 101.

*Examiner maintains 35 U.S.C. 101 rejection because "the traffic distribution is optimized within the network..." does not produce a useful, concrete **and tangible** result with regards to claim 1 because the fact remains that nothing is done after the link weights are adapted in the communication network.*

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 9-25, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Denecheau et al. (United States Patent Number 6,611,874).

Regarding **claim 9**,

Denecheau teaches,

a) assigning start values for the link weights to the links of the communication network; **(See Col. 2 Lines 28-44, Denecheau teaches assigning start values for 3 routes or links – which in this particular example he assigns three equal routes or costs)**

Denecheau further teaches,

b) calculating paths for routing of traffic within the communication network on the basis of the link weights; **(See Col. 7 Lines 45-55, Denecheau teaches the dynamic calculation of all paths.)**

Denecheau further teaches,

c) determining the values of the parameter for the links using the calculated paths and the expected traffic volume; **(See Col. 8 Line 46 – Column 9 Line 5, Denecheau teaches determining the values of the links for all possible paths.)**

Denecheau further teaches,

d) determining such link for which the parameter has the highest value; and **(See Column 8 line 45 – Column 9 Line 11, Denecheau teaches that the highest value parameter determined, with regards to one of a number of routers, can be chosen.)**

Denecheau further teaches optimizing the link bandwidth and sending packets along the highest capacity link. **(See Column 8 line 45 – Column 9 Line 11.)**

Denecheau does not explicitly teach increasing the link weight for the determined link, repeating the steps (b-d) until the value of the parameter for the determined link is higher than the parameter value for the determined link relative to a preceding step d), and wherein the traffic distribution is optimized within the communication network for an expected traffic volume relating to the link usage.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have known that optimizing the link

bandwidth utilization along a specific path would be characterized by increasing the bandwidth of a path and thus increasing the link weight of the specific path. Furthermore, repeating steps (b-d) to further optimize the routes would have been obvious to one of ordinary skill because the steps have all been taught by Denecheau, and since a network is a dynamic entity, looping over these steps would have been obvious to one of ordinary skill. Finally, one of ordinary skill in the art would have known that the traffic distribution is optimized within the communication network for an expected traffic volume relating to the link usage would be done by optimizing the link bandwidth and sending packets along the highest capacity link.

Regarding **claim 10**,

Denecheau further teaches the method in accordance with claim 9, wherein the parameter is produced by an absolute traffic load, a relative traffic load related to link bandwidth traffic-related costs arising for using the link, a link availability, a delay time of the relevant link, or the load capabilities of an end node of the relevant link. **(See Col. 7 Lines 16-27, Denecheau discloses traffic operation by balancing traffic over different routes)**

Regarding **claim 11**, Denecheau further teaches the method in accordance with claim 9, wherein start values for the link weights are the same for all links. **(See Col. 12 Lines 28-44 and figure 1, Denecheau discloses three equal routes at start)**

Regarding **claim 12**, Denecheau further teaches the method in accordance with claim 10, wherein the start values for the link weights are the same for all links. **(See Col. 12 Lines 28-44 and figure 1, Denecheau discloses three equal routes at start)**

Regarding **claim 13**, Denecheau further teaches the method in accordance with claim 9, wherein the paths are calculated using the OSPF (open shortest path first) protocol or the IS-IS (Intermediate System - Intermediate System) protocol. **(See Col. 2 Lines 28-37, Denecheau discloses the OSPF (open shortest path first) protocol)**

Regarding **claim 14**, Denecheau further teaches the method in accordance with claim 10, wherein the paths are calculated using the OSPF (open shortest path first) protocol or the IS-IS (Intermediate System - Intermediate System) protocol. **(See Col. 2 Lines 28-37, Denecheau discloses the OSPF (open shortest path first) protocol)**

Regarding **claim 15**, Denecheau further teaches the method in accordance with claim 11, wherein the paths are calculated using the OSPF (open shortest path first protocol or the IS-IS Intermediate System - Intermediate System) protocol. **(See Col. 2 Lines 28-37, Denecheau discloses the OSPF (open shortest path first) protocol)**

Regarding **claim 16**, Denecheau further teaches the method in accordance with claim 9, wherein the paths calculated if the abort criterion f) is fulfilled are used for routing within the framework of the ECMP (Equal Cost Multi Path) concept. **(See Col. 2 Lines 10-27, Denecheau discloses ECMP, load balancing per packet multi-path algorithm)**

Regarding **claim 17**, Denecheau further teaches the method in accordance with claim 10, wherein the paths calculated if the abort criterion f) is fulfilled are used for routing within the framework of the ECMP (Equal Cost Multi Path) concept. **(See Col. 2 Lines 10-27, Denecheau discloses ECMP, load balancing per packet multi-path algorithm)**

Regarding **claim 18**, Denecheau further teaches the method in accordance with claim 11, wherein the paths calculated if the abort criterion f) is fulfilled are used for routing within the framework of the ECMP (Equal Cost Multi Path) concept. **(See Col. 2 Lines 10-27, Denecheau discloses ECMP, load balancing per packet multi-path algorithm)**

Regarding **claim 19**, Denecheau further teaches the method in accordance with claim 13, wherein the paths calculated if the abort criterion f) is fulfilled are used for routing within the framework of the ECMP (Equal Cost Multi

Path) concept. **(See Col. 2 Lines 10-27, Denecheau discloses ECMP, load balancing per packet multi-path algorithm)**

Regarding **claim 20**,

Denecheau teaches all the limitations of claim 9.

Denecheau does not specifically teach the possible usage of whole numbers when expressing link weights and their increases.

It would have been obvious to someone of ordinary skill in the art at the time of the invention to use whole numbers when expressing link weights and their increases because it is a design choice that could make the calculations of the link weights and their increases processed more quickly, and viewed more easily.

Regarding **claim 21**,

Denecheau teaches all the limitations of claim 10.

Denecheau does not specifically teach the possible usage of whole numbers when expressing link weights and their increases.

It would have been obvious to someone of ordinary skill in the art at the time of the invention to use whole numbers when expressing link weights and their increases because it is a design choice that could make the calculations of the link weights and their increases processed more quickly, and viewed more easily.

Regarding **claim 22**,

Denecheau teaches all the limitations of claim 11.

Denecheau does not specifically teach the possible usage of whole numbers when expressing link weights and their increases.

It would have been obvious to someone of ordinary skill in the art at the time of the invention to use whole numbers when expressing link weights and their increases because it is a design choice that could make the calculations of the link weights and their increases processed more quickly, and viewed more easily.

Regarding **claim 23**,

Denecheau teaches all the limitations of claim 9.

Denecheau does not specifically disclose that the link weight is increased for both directions of transmission of the link.

It would have been obvious to someone of ordinary skill in the art at the time of the invention to increase the link weight for both directions of transmission of the link because it would be efficient to do so. For example, providing the same link weight for a path from point A to point B and from point B to point would have been obvious to someone of ordinary skill in the art because it is the same path just different directions.

Regarding **claim 24**,

Denecheau teaches all the limitations of claim 10.

Denecheau does not specifically disclose that the link weight is increased for both directions of transmission of the link.

It would have been obvious to someone of ordinary skill in the art at the time of the invention to increase the link weight for both directions of transmission of the link because it would be efficient to do so. For example, providing the same link weight for a path from point A to point B and from point B to point A would have been obvious to someone of ordinary skill in the art because it is the same path just different directions.

Regarding **claim 25**,

Denecheau teaches all the limitations of claim 11.

Denecheau does not specifically disclose that the link weight is increased for both directions of transmission of the link.

It would have been obvious to someone of ordinary skill in the art at the time of the invention to increase the link weight for both directions of transmission of the link because it would be efficient to do so. For example, providing the same link weight for a path from point A to point B and from point B to point A would have been obvious to someone of ordinary skill in the art because it is the same path just different directions.

Regarding **claim 28**,

Denecheau teaches a computer program product for adapting link weights in a communication network formed with links embodied on a computer readable medium, the computer program product comprising:

Denecheau further teaches means for assigning start values for the link weights to the links of the communication network; **(See Col. 2 Lines 28-44, Denecheau teaches assigning start values for 3 routes or links – which in this particular example he assigns three equal routes or costs)**

Denecheau further teaches means for calculating paths for routing of traffic within the communication network on the basis of the link weights; **(See Col. 7 Lines 45-55, Denecheau teaches the dynamic calculation of all paths.)**

Denecheau further teaches means for determining the values of the parameter for the links using the calculated paths and the expected traffic volume; **(See Col. 8 Line 46 – Column 9 Line 5, Denecheau teaches determining the values of the links for all possible paths.)**

Denecheau further teaches means for determining such link for which the parameter has the highest value; and **(See Column 8 line 45 – Column 9 Line 11, Denecheau teaches that the highest value parameter determined with regards to one of a number of routers can be chosen.)**

Denecheau further teaches means for optimizing the link bandwidth and sending packets along the highest capacity link. **(See Column 8 line 45 – Column 9 Line 11.)**

Denecheau does not explicitly teach means for increasing the link weight for the determined link, repeating the steps until the value of the parameter for the determined link is higher than the parameter value for the determined link relative to a preceding determination, and wherein the traffic distribution is optimized within the communication network for an expected traffic volume relating to the link usage.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have known that optimizing the link bandwidth utilization along a specific path could be characterized by increasing the bandwidth of a path and thus increasing the link weight of the specific path. Furthermore, repeating steps to further optimize the routes would have been obvious to one of ordinary skill because the steps have all been taught by Denecheau, and since a network is a dynamic entity, looping over these steps would have been obvious to one of ordinary skill. Finally, one of ordinary skill in the art would have known that the traffic distribution is optimized within the communication network for an expected traffic volume relating to the link usage could be done by optimizing the link bandwidth and sending packets along the highest capacity link.

6. Claims 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Denecheau in view of Oki et al., **U.S. Patent Application Publication No. US 2003/0156536**, herein referred to as **Oki**.

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Regarding **claim 26**,

Denecheau teaches all the limitations of claim 9.

Denecheau does not specifically disclose the expected traffic volume is described by the traffic matrix.

Oki teaches a traffic matrix which describes the expected traffic volume.

(See paragraphs [0134] through [0138], Oki et al. discloses the use of a traffic matrix representing the expected traffic volume)

It would have been obvious to someone of ordinary skill in the art at the time of the invention to use the traffic matrix found in Oki et al. along with the disclosure of Denecheau because the traffic matrix can be used to help predict influence of weight changes of links on traffic flow.

Regarding **claim 27**,

Denecheau teaches all the limitations of claim 10.

Denecheau does not specifically disclose the expected traffic volume is described by the traffic matrix.

Oki teaches a traffic matrix which describes the expected traffic volume.

(See paragraphs [0134] through [0138], Oki et al. discloses the use of a traffic matrix representing the expected traffic volume)

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the traffic matrix found in Oki et al. along with the disclosure of Denecheau because the traffic matrix can be used to help predict influence of weight changes of links on traffic flow.

Response to Arguments

Applicant's arguments filed 11/28/2007 have been fully considered but they are not persuasive.

Regarding the last paragraph on Page 6, Applicant argues that "computing a path is not determining a value of a parameter, but merely computing a path along which the data may travel". Examiner respectfully disagrees. Examiner directs Applicant to Col. 8 Line 46 – Column 9 Line 5 in Denecheau where a final path can be selected, using the particular parameters, from the determined values. In order to optimize a specific link, the cost of sending data on this particular route must be determined.

Regarding paragraph 1 on Page 7 of Applicant's arguments, Examiner points to Column 8 line 45 – Column 9 Line 11, Denecheau teaches that the highest value parameter can be chosen from one of a number of routers.

Regarding paragraphs 2 and 3 on Page 7 of Applicant's arguments, Examiner points Applicant to U.S.C. 103 rejection to claim 9.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any response to this Office Action should be **faxed** to (571) 272-8300 or **mailed to:**

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Hand-delivered responses should be brought to
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, Virginia 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NINOS DONABED whose telephone number is (571)270-3526. The examiner can normally be reached on Monday-Friday, 7:30 AM-5:00 PM EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benny Tieu can be reached on (571) 272-7490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ninos Donabed
Art Unit 4177

/Benny Q Tieu/
Supervisory Patent Examiner, Art Unit 4177